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THE New York legislature will meet after the holidays in their new capitol, a building which has been the centre of many battles, both artistic and financial, for the last three years. Our readers will doubtless remember the struggle which followed the effort of the Advisory Board to change the style of the building, of which we gave a pretty full account at the time (see *American Architect* for 1876, *passim*), the battle of styles among architects, and the final order of the legislature that the exterior of the building should be finished in Renaissance. The violent opposition of the New York architects, intemperate as it was, undoubtedly did good in the end by preventing an abrupt and conspicuous transition at mid-height from a rigid Renaissance treatment to an easy-going Romanesque; and pains has been taken in what has thus far been added to the exterior to secure a degree of harmony between the lower part and the freer Renaissance work which has been built upon it. No restriction, however, was set on the style of the interior, and the architects of the Board have been indulged in a Gothic Assembly Chamber, as well as, we believe, a Romanesque treatment of the interior court. We published three weeks ago a correspondent's interesting description of the building as it is, particularly of the new Assembly Chamber, which is at present its most interesting feature. Mr. Hunt's work has meanwhile been finished, and by the seventh of January (the day appointed for the formal opening of the building) that part of it which is meant for immediate use will be in order. This is only the north wing, perhaps a third of the building, and for the present the State Senate will be housed in the room beneath the Assembly Chamber, which was originally intended for the Court of Appeals, the Senate Chamber proper being in the south wing, which is still unfinished. The New York daily papers, apparently confused by the traditions of the old quarrel, have treated their readers to some amusing comments upon the discordance between the Romanesque lower stories of the exterior and the Renaissance of the upper part.

MR. W. W. STORY, who has before shown his interest in the Washington Monument by various suggestions for its amelioration, has lately written a long letter about it to Mr. Corcoran, which is published in the *Washington Post*. He refers to the design which he lately offered through Senator Morrill, and makes a spirited protest against the carrying out of the present intention. Mr. Story's design, as it is described, is simply the carrying out of one of his suggestions made a year ago. He proposes, in brief, to use the existing stump as the shaft of a tower, to which he will add a porch at the base, with an equestrian statue of Washington beneath it. This at one side of the base would be balanced by a statue of Liberty on the opposite side, and on the lateral faces are to be two bronze doors sculptured with the scenes of the Revolution. At the top is to be a statue of Fame in gilt bronze; whether above the conical roof which Mr. Story proposed before or not, we do not learn. He recites the obvious objections to the present design, very much as we have heretofore presented them. To the argument that the Association is pledged to carry out the original, he answers pertinently that the most distinctive features of that design have already been given up, — the combination of the circular colonnade with the obelisk. Of the obelisk itself he pungently says: "This form of monument is the refuge of incompetency in architecture. When an architect has no ideas he resorts to the obelisk." The Monument Commission has decided, it is said, to lay Mr. Story's design before Congress, without any recommendation, assuming that it has no power to to adopt a plan; but is opposed to any change in the present design.

THE people of Cleveland are rejoicing over the completion of their great viaduct, which was dedicated and opened for travel with much solemnity a week ago. Their handsome city, standing on a bluff bank some eighty feet above Lake Erie, is divided by the small river Cuyahoga, which there runs into the lake. The new viaduct crosses the river and the margins of lower ground on each side of it, binding together the high lands on which the two parts of the city are built. It is a grand and costly structure, more than three thousand feet long; a solid causeway at the ends, continued on broad stone arches across the low ground, and across the river on iron trussed girders, dipping somewhat toward the middle, with a pivoted draw-span of 332 feet, where the roadway is seventy feet above the river. The trusses are what are called double intersection Pratt trusses, and are computed for a live load of one hundred pounds to the square foot. The whole width of the viaduct is sixty-four feet, of which forty-two are given to the roadway, which carries two horse-car tracks, and eleven to each sidewalk, with its parapet: but it is narrowed to forty-six feet at the draw. The structure has consumed, the engineer reports, some fourteen hundred tons of iron (the draw weighing more than five hundred tons), eighty thousand perches of stone, fifty miles of piles, and has cost nearly two millions and a quarter. There are about seven hundred and fifty feet of causeway, thirteen hundred and eighty of viaduct, and nine hundred and thirty-two of iron bridge.

THE bridge has a history, and its completion is of special significance to the people of Cleveland as marking the final issue of a long struggle. The settlements on the two sides of the river have not always been one community, nor even fraternal in their relation. Till within a little more than twenty years they were two towns; the larger, on the east side, being called Cleveland, and that on the west the City of Ohio, or more popularly, Ohio City. The two cities showed from their infancy a propensity to quarrel about crossing the river, and when after two or three rude floating bridges had been swept into the lake by freshets, a permanent bridge was first built in 1836 by some citizens of Cleveland, where the Columbus Street bridge now is, a bitter family quarrel began. The people of Ohio City wanted the bridge at another point, and had got it nearly finished when the partisans of the Columbus Street bridge put an injunction upon it, stopped it, and ruined its contractor. Then the people of Ohio City declared the Columbus Street bridge a nuisance, and their sheriff removed the draw in the night. The draw being presently replaced by the people of Cleveland, their neighbors tried to blow up the bridge. Their explosives failed, and the City of Ohio cut a trench along their shore and isolated the bridge from the bank. When the Clevelanders attempted to fill up the trench they were arrested, but it proved impossible to hold them, and being set free, they established a guard to protect the bridge. Thereupon the people of Ohio City assembled in the basement of one of their churches, appointed a commander, and after fortifying themselves by a religious service marched upon the bridge, armed with whatever mischievous tools they could lay hands on. The Clevelanders meanwhile had planted a field-piece to sweep the bridge, loading it with spikes and old iron. Fortunately a clever Yankee on the Ohio side contrived to spike the gun, but a battle followed which was only prevented from being bloody by the scarcity of fire-arms. It was interrupted by the sheriff of the county, and to this day the descendants of both sides claim the victory. The result was that in the end both bridges were retained. The project of a high viaduct was first suggested, in 1836, by an enterprising editor of the Cleveland *Advertiser*, who proposed to build one on a great scale, that should serve for railway communication as well as for ordinary travel. His scheme was derided as wild, and it was not till after the war that a similar one was seriously pressed. But it was a chief point in the agreement under which

the two cities were united that the consolidated government should give its special attention to providing the river with adequate bridges as they should be needed. In 1870 the Mayor of Cleveland, Mr. Buhrer, in his annual message urged on the city the importance of a high-level bridge. The matter was then taken up in earnest, though it was delayed by litigation, legislation, and divided counsels, and only in 1874 was the actual viaduct, for which the first design had been furnished by Mr. Strong, the city engineer in 1872, begun under the charge of Mr. B. F. Morse, then city engineer, who has carried it through to the end.

The Student's Art Club, of Harvard College, has opened what is a very interesting exhibition, and in some ways unique. It consists of drawings made and collected by Mr. Moore, the instructor in Art of the University. Among them are a number of drawings by Mr. Ruskin, several of Ward's remarkable copies of Turner's water-colors, a good many of Mr. Moore's own drawings, made mostly during a late visit to Europe, and copies by him of pictures or parts of pictures by some of the Venetian painters, and by Botticelli. The main purpose of the collection is to show the students in the Fine Arts course the value of careful and conscientious delineation, and to give them examples of this for study. It would be a good thing if some of Mr. Ruskin's superb drawings could be seen by the many persons who, having looked at one side of him, will see no other, and think of him only as the prophet of laborious manipulation. Mr. Moore's drawings also are masterly in their kind, some of them rapid and some of them finished with the last degree of care. The examination of one or two of the drawings of both, ought to give the student a comforting sense of the sureness and force in rapid work which are given by the habit of deliberate and painstaking study, as the pianist gains the utmost mastery for execution by deliberation in practice. The whole exhibition, not a large one, makes a valuable showing of one side of the painter's work, and that aside that it is much the fashion to neglect nowadays.

Mr. Charles Augustus Howell is a gentleman of taste and culture, a collector of prints and *objets d'art* of all sorts, and a decorator of houses. A few years ago he leased a fine old Queen Anne mansion in the neighborhood of London, and fitted it up luxuriously with all the appliances which modern taste has revived or discovered, with a view to the more attractive setting forth of the pictures, bronzes, pottery, tiles, and other details of household art which formed his stock in trade. To this artistic paradise his friends were tempted, and there, betrayed by the splendor of the surroundings, were at once converted into clients, to the great advantage of the higher civilization, and to the great profit of the ingenious Mr. Howell. By the requirements of his lease, he was obliged in the outset to lay out £500 in repairs, and to pay £170 per year for twenty-one years. Being dispossessed by the Metropolitan Railway some sixteen years before the termination of the lease, he brought suit against it to recover for interest in the lease, for money laid out in decorations and repairs, for value of fixtures, cost of removing, and interruption of business. He claimed that he had laid out £1,000 in substantial repairs, and £1,000 in permanent embellishments, and had thus, and by his furniture and fittings, created a type of fashionable decoration, which had inflamed his wealthy patrons with a sort of *artis sacra fames*. The evidence produced was mainly given by the leading decorators in London, by Mr. Godwin, the architect, and by the claimant himself, who succeeded in making a very effective presentation of his case, and in delivering his testimony with such humor and *bonhommie* as frequently to interrupt the proceedings with "roars of laughter." The evidence mainly went to show that, according to prevailing tastes, an old Queen Anne mansion is better adapted for the exposition of objects of household art than any other, and for this reason, and because genuine Queen Anne mansions are not conveniently in the market for such purposes, the claimant was entitled to special damages for the loss of an important appliance of business. As for the amount of these damages, the estimates of the various witnesses did not greatly differ, and in detail they serve as a curious exponent of the pecuniary value set upon sentiment. The following items pretty fairly represent the average figures: For interest in the lease, £1,400; for cost of replacing the decorations, £1,000; for repairs over and above those required in the lease, £500; for cost of removal and loss of business, £750. The jury, after a very brief deliberation, gave a verdict accordingly for the very handsome sum of £3,650.

There does not seem to be much expectation that Congress will accept any benefit, at present at least, from the report of the Committee on National Surveys, which we printed in our last number. Its proposal is one in which people do not generally take the interest it deserves, and we have seen it opposed on grounds which indicated that the real bearings of the plan were not understood. The objection has been made, and we fancy it will be commonly raised, as it certainly will be influential among persons who do not think much about the question, that the project suggested by the Committee is enormously expensive. We have seen a computation that to carry out such a system of geodetic and topographical surveys as logically follows from the report would cost a hundred and fifty millions of dollars. Without troubling ourselves about the actual sum called for, we may feel satisfied on two points: First, the amount of work provided for by the scheme has got to be done in the end, and will be done by some means or other; and it will be done at greater cost and with less accuracy if it is left to be done as it may, than if it is carried on under a single efficient management. Second, there is no more need under the proposed system than under any other, or than under no system, of doing all the work at once, or of doing it any faster than it is required.

The details of the assignment of the work which the committee proposes involve questions of administration upon which we do not assume to pass; but it is certain that both the quality of the work and its economy would be favored by combining all the surveys of mensuration that are carried on by the government into one coherent system and under one administration. The necessity for a consistent and continuously executed scheme of mensuration, extended over its territory and carried out as it can be only by a government, has been recognized in all civilized countries except our own. Some of our older States are tardily and expensively, but necessarily, supplying their want of such a system by State surveys, and the evils of the contrary plan are strikingly brought out by the progress of the New York Survey. Local surveys are found not to consist with each other or with themselves; the maps compiled from them are misleading; towns are laid down miles out of their proper places; boundaries are in dispute, and property sometimes taxed in two counties at once; contouring and levelling are not, and every new engineering enterprise requires a new determination of the old data. As our country fills up it must be surveyed in detail, piece by piece, and the question is simply whether this shall be done in a consistent, accurate, systematic manner, and properly recorded, with the precision and economy which are only attained by doing such work on a large scale, and by uniform method; or whether it shall be fragmentary, disorderly, incomplete, and untrustworthy, its results unrecorded, so that it shall have to be done again and again, here and there, with the vexation and waste that attend the incoherent execution of work which demands system.

ARCHITECTS' COMPETITIONS.

II. TRIAL BY ARCHITECTS.

In our last article on competitions we dwelt on the faults of open competitions, or those which, ignoring the architect, are decided only by a comparison of drawings. We argued that, whatever their advantages, they are extravagantly expensive to architects; more or less derogatory to the profession, inasmuch as they put the architect out of sight behind the draughtsman, and give committees a low idea of the value of his service; misleading to committees and clients by inducing them to put undue faith in their own judgment and select their architects in the dark; embarrassing to both sides by hemming them in with restrictions, which it is dishonorable to violate, and often awkward or even injurious to abide by; and productive of much ill blood and unfair dealing. We argued also that the results of such competitions were liable to be unsatisfactory, because they were designs struck out at a heat, worked up with much labor, but without mature consideration, and under temptation to aim at immediate effect rather than at well-considered excellence. We said that there was another view of competitions and their purposes which naturally led to a different management of them, and, in our opinion, to better results. In this view the purpose

of a competition is to select not a design but an architect, and of this we have next to speak.

It is a natural thought that the ultimate purpose of any client is to procure a "plan," — using the word in the loose generic sense which it is common to give it, — and that therefore this may properly be the foremost thing from the beginning. But this is not really the case. The ultimate object is actually neither a plan nor an architect, but a building of some kind. The architect's drawings are merely his description of what he proposes that the building shall be, — a description necessarily more or less imperfect and incomplete, usually hasty, and often quite far from what he would in the end offer. The actual comparison by which selection is made is not even between the plans themselves as they are submitted, but between what the client, or the building committee, which for brevity's sake we will call the client, may discover in them; for the ordinary client or committee never sees all, or nearly all, that is expressed or implied in the drawings before him. But there is a great deal more in the execution of a building than can be shown in any description of it, however minute. The details of its carrying out, the architect's capacity to realize his intentions, his faithfulness and success in management, the skill with which he may meet emergencies, or adapt himself to alterations, that are not foreseen, — all these are important factors in the result, and may, in the end, prove more important than the plan he submits at the outset. Since, then, plans are by no means all that is wanted, and since the client cannot see all that they are, it is worth while to encourage among clients the understanding that the architect is more than his plans; and, in the interest of both, any system which, by giving predominance to the plan, tends to depreciate the personal quality of the architect is so far to be deprecated. That this is the tendency of what we have called trials by plan will hardly be disputed by anybody who has carefully watched their working. We need no better instance than the recent competitions for the Indiana Capitol.

The obvious way to make sure of the personal qualities which are as important in an architect as in any other professional man, and are but dimly indicated in his plans, is to consider beforehand who shall be employed, as is done in the other professions, and to choose one's architect according to his known qualifications. This principle of selection would seem to supersede competitions, as was substantially proposed by President Barry in the address to which we have before alluded; and if it should be applied so as considerably to diminish their frequency there would probably be no harm done. But different architects, though they be of presumably equal skill, not having a definite result to reach, like the curing of a patient or the winning of a lawsuit, are sure to solve the same problem in different ways, among which ways the client is likely to have a decided preference. Nor does it necessarily happen that the most skillful architect will in any given case be the one who among the innumerable possible solutions will hit upon the happiest; still less that he will find that which will be most acceptable to the client. Hence for buildings of especial importance competitions in which architects present their designs are popular, and doubtless always will be; so that it is of more avail to study how they shall be turned to best account than to protest against them.

The serious difficulties which we have described are most easily avoided and the real ends of competition secured by limited competitions, in which the client invites a number of architects to take part who are all known to be persons to whom he would intrust his work with confidence that it would be satisfactorily done. The qualifications of the architect being assured in advance, the client, who knows that whichever design he selects will be carried out with skill and faithfulness, and that its author is capable at need of adapting or modifying it to suit his requirements, is concerned only to know which will submit the general scheme best suited to his wishes, while the architects are concerned only that personal preference shall not influence his judgment of their designs, and that one of themselves shall not have an undue advantage over another. Personal preference may be ruled out by an anonymous competition, which does not in this case put the trustworthy and the untrustworthy practitioner on a level. There being no need to guard against an unsatisfactory carrying out of the designs submitted, slight sketches are sufficient, provided only that their leading ideas be carefully considered, to show the client all he need know of the character of the designs, and probably all that he is really capable of judging. A general description may take the place of a specification. A rigid scheme of requirements is not necessary, but only such ideas as the client thinks it well to suggest, holding himself ready to waive them in favor of anything which the competitors may propose; nor is a rigid limit of cost, it only being important to suggest the limit which the client prefers not to pass, the designs being accompanied by reasonably approximate estimates, which will be factors in their comparative advantages, and the competitors being at liberty, as they should be, to consider how far the character of their designs justifies their cost, and to submit what in their judgment is the best thing for the circumstances.

By such a procedure the extreme and wasteful cost of competitions may be very greatly diminished, and with it the annoyance, excitement, and interruption of business to architects, the difficulties of clients in choosing, and the danger of their blundering; while the likelihood of a good ultimate result is greatly increased. The comparative simplicity of the drawings which are required makes it easy to spare architects the temptation to a seductive display, and ought to secure the client against being diverted from the main object of his selection. This main object secured, the fewer restrictions there are to hamper both parties the less will be the waste of time and labor, the less the danger of misunderstanding and subsequent recrimination or the bitterness of disappointment, and the probability of a hasty committal to a scheme which is not the best. The competition ceases to be a trial by plans the qualities of whose authors are unknown, and becomes a comparison of projects between advisers in whom the client has confidence, and in any of whose hands he feels himself safe.

Perhaps the greatest recommendation of such a system of competition to architects is not its economy nor its security, but the fact that it tends to substitute a relation of proper professional confidence for one of distrust. The client does not attempt to strain his judgment to cover a multitude of particulars which are properly professional, but confines himself, until he is in consultation with his architect, to the general considerations which lie most within his range. He assumes from the beginning that the ultimate form and detail of his project are matter for professional consultation, and therefore, limiting his counsellors to trusted architects, assumes at once an attitude of confidence toward them, instead of demanding securities in advance for the competence of the unknown architect whom he may select, or inviting disappointment if he proves incapable. The relation of architect and client is instinctively different in the two cases. On the one hand there are profuse offers of service and the feeling of the client that he has seen to the end of the architect's work; on the other, the necessary comparison of preliminary ideas, and then the client knowingly commits his important charge to the discretion of a trusted agent. In the one case there is from the outset a presumption of confidence, in the other of distrust. The successful competitor may in the former case conquer the presumption against him by his personal dealing, but there can be no doubt that the difference in the two cases makes a real difference in the respect which the clients have for the profession at large; this is the important thing, and it is an advantage not to be overlooked. There are the compensations which we have quoted, that general competitions tend to lessen the overweening influence of names, and give a chance for unknown men to come forward. These have their weight, and must be kept for further consideration, but it must not be forgotten that one of the great stumbling-blocks in the way of our profession is the tendency to mutual distrust between its clients and itself. Any system that encourages an attitude of mutual defiance instead of a confidential one is to be carefully scrutinized. The conditions of business life furnish no substitute for confidence in a professional adviser.

DECORATIVE ART.

In our superficial age there seems to be some danger that the term "Decorative Art" will come to be limited to the sunflowers in crewels and the vegetable forms on pottery that have sought its protection. But decorative art, as the term implies, is art subordinated or controlled to a decorative purpose, and in this wider sense all art should be decorative, except such manifestions of it as have to do only with the rendering of facts.

Much has been written as to flatness in decorative art, and many have held that it was one of the prime and essential conditions of all decorative work in color: it seems to us that much of the misdirected effort, and its meagre or even hideous results, is due to mistaking for flatness, in good work, what is really continuity of sur-

face. Flatness, as it is exemplified by modern theorists, is really no better in painting than it would be in music or in cooking; the very term "flat" should be a sufficient warning, for it seems born to be associated with stale and unprofitable. Flatness of color, and dryness and endless repetition of hard outlines are nearest akin to vacancy.

A hinting at relief, and play of light and shade, delicate gradations of tone, sometimes melting into one another, sometimes vigorously opposed; a composition of form and color arranged and controlled by the designer, and repetitions and geometric arrangements, when not too evident or too monotonous; such seem to us the true qualities of decorative work so long as the ornament grows out of the essential or constructive qualities of that to which it is applied. Such decorations are likely to please the imagination and to occupy and instruct it without forcing themselves upon the attention. All ornament ceases to be decorative, no matter what inherent beauties it may possess, the moment it contradicts the qualities of the object to which it is applied or attempts to make that object seem what it is not. A painter may suggest distance, foreshortening, or light and shade, and his painting will be decorative, so long as it is in proper harmony with its surroundings, if it does not attempt to simulate the above qualities of nature. An attempt to simulate or imitate the facts of nature destroys necessarily the continuity of the painted surface.

All art up to the beginning of the sixteenth century was decorative art, and even up to the present day many of the greatest efforts of art have been truly decorative. But with the growing skill of the artists in mastering the technical difficulties of their craft, the tendency developed of making paintings and sculptures with less and less regard to the relations they were to bear to objects around them and to balanced distribution of color, until now, the commonly accepted idea of a painting or piece of sculpture is an object bearing no relation whatever, either in sentiment, color, or form, to any of its surroundings, and in the case of paintings separated from its surroundings by the strongest imaginable barrier, — a heavy mass of gilded frame.

The artists and the public together have gradually wrought this change, and architecture, sculpture, and painting, instead of working hand in hand, as they once did, in the realization of ideas that glorified them, all have come to live separate existences, seriously to the detriment of them all.

The great arts named above have found other, though narrower, fields in which to live and work; but how many of the minor expressions of art have gone entirely astray or disappeared. Mosaics, enamelling, jewelry, bronze-casting, and wood-carving make but a poor showing when compared with the work of the past.

That easel painting, as we may call the modern developments of the painter's art, has proved itself noble, worthy, and true art, and sometimes decorative art as well, is, of course, unquestioned; but that the arts, in general, have suffered by the absorption of so much of the artistic effort of our time, into one relatively narrow channel, seems equally certain.

The French, who take the lead in our day in art training and in organized development of the fine arts, have long recognized this fact, and have constantly encouraged in their public buildings the coöperation of the painters and sculptors wi h the architects. They have achieved varying results, of course, but also enough brilliant successes to prove the value of the attempt. The names of the painters, Delaroche, Flandrin, and Baudry; and of the sculptors Pradier, Chapuy, and Bartholdi will go down to posterity in connection with the great monuments they aided in making beautiful.

By taking almost at random a few examples of old work, it will be seen how interdependent the parts of a great design were made and how their interdependence enured, not only to the beauty of the general effect, but to the beauty of each separate part.

In Greek work the harmony of combined effort was greatest, and though we know but little of their use of color, the power they have shown in developing the relations between their architecture and their sculpture, and their unerring perception of the limits and possibilities of each, should satisfy us that they could not have gone far wrong in color. The way in which the sculpture of the Parthenon is composed to give the greatest and most noble effect, the way its great richness of relief and wonderful modelling is controlled to enhance the purely architectural lines, and on the other hand the feeling that inspired the architect, and enabled him to make the dignity and almost severe simplicity of his forms not only harmonize with but enhance the graceful, flowing lines of sculpture, all deserved the closest study, and most enthusiastic homage.

The same harmony is seen in the Egyptian temples and monuments, where the architecture, sculpture, and painting are all moved by one common and controlling thought. In India, on the other hand, wonderful monuments exist which might be great but for the encroachment of the sculptor on the architect's domain.

In Italy, beginning with the earliest Byzantine period, and following the development of the Italian Arts, we have in Cimabue, Giotto, Fra Angelico, Donatello, and on to Raphael, Titian, and a host of others, artists whose works were in the widest sense decorative. They all had this in common that they recognized the need of subordinating their work to the general scheme, and to the controlling conditions of light and space and surroundings. Their works were composed so entirely with a view to their decorative effect that a patchwork of the color could be taken (the experiment has been successfully made), say in a fresco of Signorelli's, and a purely conventional treatment of natural forms could be worked over that patchwork, and the result would still be decorative and beautiful in a high degree, though losing, of course, the charm of human sentiment and the powerful appeal to the imagination of the emotions depicted in the fresco.

It has always seemed to us that the Sistine marked a turning point in the history of art. It is the first notable instance in which the painter, in his magnificent strength, chose to disregard the constructional forms imposed upon him, and to simulate an architectural structure of his own in paint, and we have always felt, that, in spite of its great qualities, it fails of being the best work in the measure that the painter succeeded in his attempt; certainly the Sistine opened the way for the dreadful abuses of the later schools, which piled one fantastic structure upon another till there seemed to be miles of distorted perspective on their ceilings, and brought the clouds of their heavens down in plaster reliefs upon their cornices and architecture.

When the painters first lost sight of their true relation to the whole composition, and began to sacrifice the effect of the whole to the glory of their technical skill, they found the public ready to encourage them with applause and patronage; both the artist and the patron losing sight of the greater in their admiration of the wonderful and more novel qualities of the narrower field of art, until, to-day, the easel painting reigns the accepted and almost the only field for the painter's genius.

This is not meant to detract from the value, nor to deny the high achievements of the easel-painters, but to point out to the public, and particularly to those of the public who control great buildings, museums, or churches, or who are making homes that they expect to stand as a worthy remembrance of themselves in the eyes of their posterity, that there is a great and glorious field of art which is almost unproductive. The painters feel this, and there are many men of mark amongst them who would bring to the task of laboring in such a field a fresh enthusiasm and inspiration that would be sure to produce good work, and when experience had once cleared the way of technical difficulties splendid results might follow. The architects and sculptors would hail the coöperation as sure of giving a crowning glory and an added importance to their own work. But it is for the public to take the initiative, and if any one should doubt the practicability of these suggestions, let him visit Trinity Church, in Boston, where Messrs. Gambrill and Richardson had the coöperation of LaFarge; or St. Thomas', in New York, where LaFarge and St. Gaudens, the sculptor, worked together, and, in spite of architectural dispositions on the whole unfavorable, achieved an excellent result. It seems unlikely that any one will dispute the advance in tendency that these works, and some few others that have been done in this country, show over the work that has preceded them; they are of necessity experimental in many ways, and better results could have been obtained but for the difficulties which had to be overcome, such as the want of experience in matters of technical treatment, and in the want of skilled workmen to carry out certain parts of the work done as preparation for the color.

How much yet remains to be done before the public in this country is made familiar with the idea that architects, sculptors, and painters should coöperate in the carrying out of public or private buildings is shown by a glance at any of the more important of them.

The only attempts on the part of the public at obtaining decorative work, have resulted in throwing a great deal of such work into the hands of the architects who have struggled valiantly to do things for which they are only qualified in as much as they appreciate the possibilities of the case, and are loath to have it entrusted to hands less competent than their own. No architect is competent to design and carry out the decoration in color, or the modelling of the sculpture in the work he designs, unless he either limits greatly the possibilities of the decoration or else gives a great deal more time to the mastering of technical knowledge than usually he can afford; but at least the architect, as the result of his broader training and wider studies, can do what he does in decoration with a much greater harmony of general result, than the decorator, cabinet maker, or upholsterer of the same relative standing, who have much greater technical resources. This is natural, and as it should be, and if only the painter and sculptor were called forward when the occasion required their work, every one would benefit by limiting himself to that for which he was best fitted.

We must not lose sight of the fact, that to have the completed design a perfect and beautiful whole, unity is absolutely essential; there must be one mind to conceive and control, and whilst each artist and artisan does that which his talents make him the most competent to undertake, the architect must retain the power to assign to each one, himself included, the part he is to play in the general scheme and the general limitations under which he is to play it.

B. W.

THE ILLUSTRATIONS.

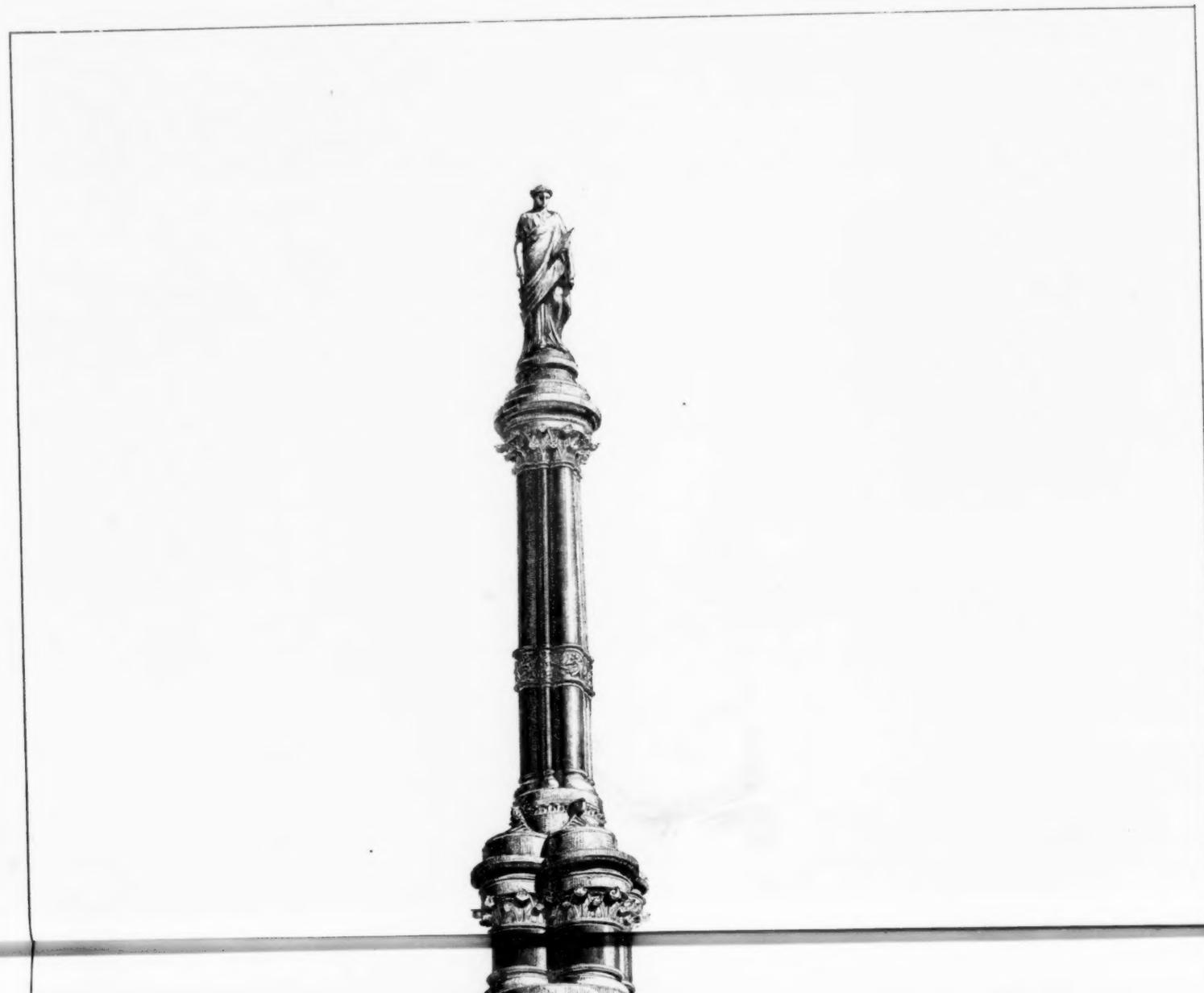
DESIGNS FOR THE HOWARD NATIONAL BANK BUILDING IN BOSTON. — MESSRS. PEABODY AND STEARNS, ARCHITECTS.

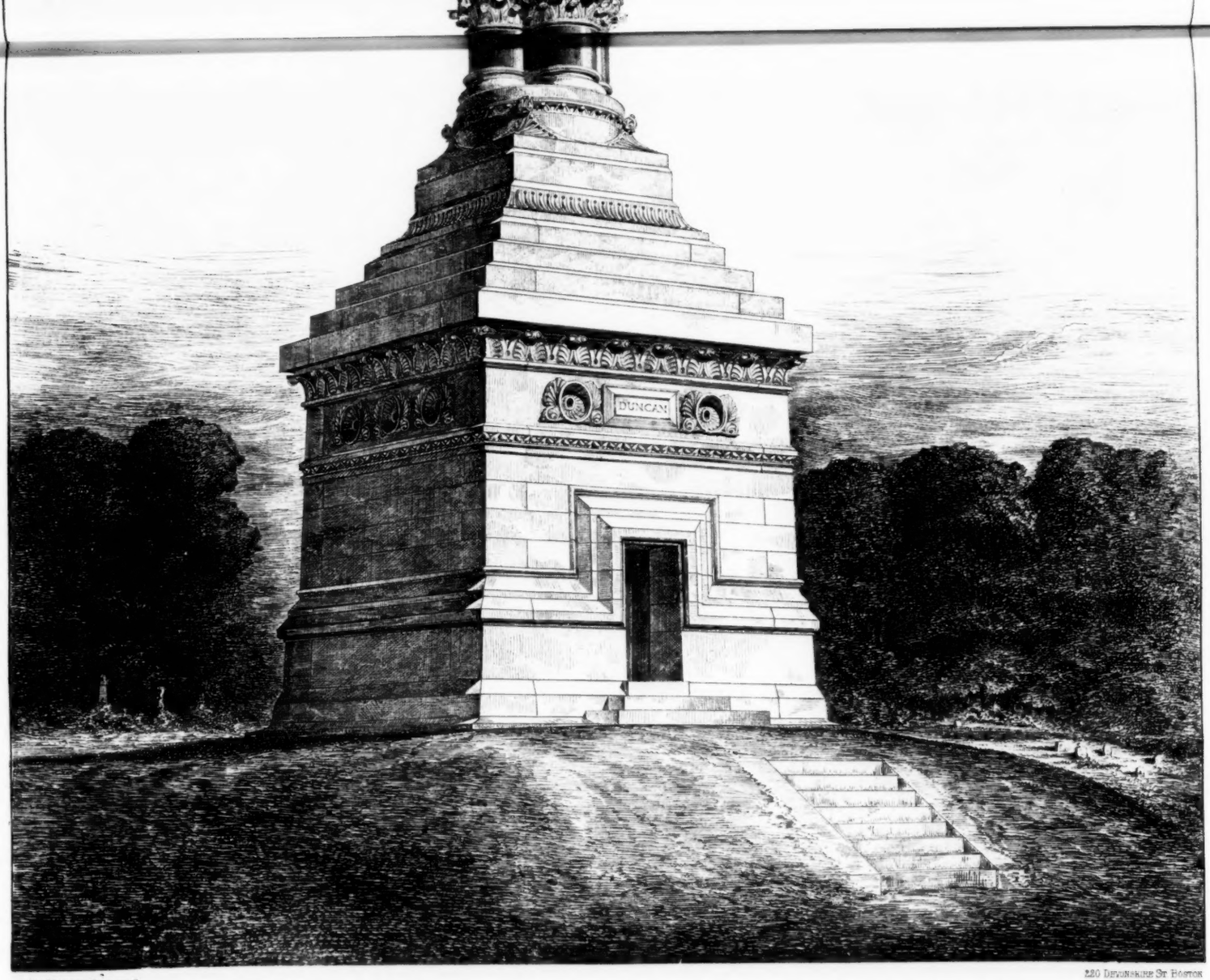
These sketches show designs prepared for two different sites. The building was put up on the wider lot, and like the sketch here given,

L.S. IPSEN DEL.

"HAFFNER'SCHES HAUS" ROTHENBURG A.D. TAUBER BAVARIA

THE HELIOTYPE PRINTING CO. 330 DEVONSHIRE ST. BOSTON

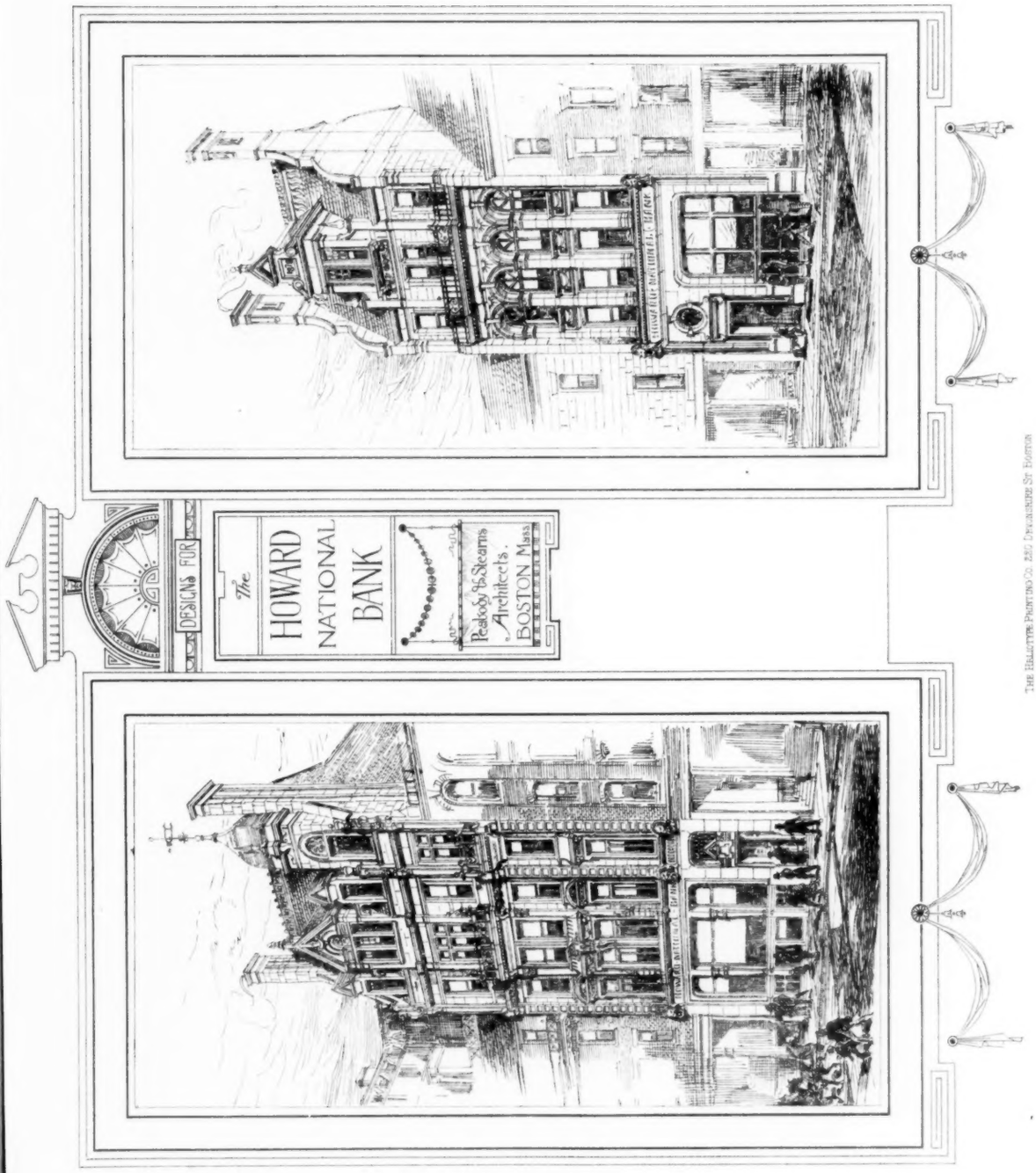




THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST BOSTON

MAUSOLEUM FOR THE LATE THOMAS G. DUNCAN, UNIONDALE CEMETERY ALLEGHENY-PA.

THEOPHILUS P. CHANDLER JR. ARCHITECT PHILADELPHIA


DESIGNS FOR
The
HOWARD
NATIONAL
BANK
Peabody & Stearns
Architects.
BOSTON Mass.
THE BULLETIN PRINTING CO. 282 DEVONSHIRE ST. BOSTON

but without the upper story. It was decided that this would not be a profitable investment, although the building is provided with a water elevator.

MAUSOLEUM FOR THE LATE THOMAS G. DUNCAN. — MR. THEOPHILUS P. CHANDLER, JR., ARCHITECT.

This monument is to be erected in Uniondale Cemetery, Allegheny, Pennsylvania. The entire structure is to be of granite, and is being cut at Quincy, Massachusetts. It is about seventy feet high, and twenty feet square at the base. The statue of the Recording Angel has been modelled by H. Jackson Elliott, sculptor, of Baltimore. The contractors are Van-Gunden, Drumm & Young, of Philadelphia. The cost will not exceed $30 000.

THE "HAFFNER'SCHES HAUS" IN ROTHENBURG A. D. TAUBER, BAVARIA. FROM A DRAWING BY MR. L. S. IPSEN, ARCHITECT.

FIRE TRAPS.

RECENTLY I had occasion to go to a neighboring town, and while there a large house, then going up, was pointed out to me with some pride, as one of the evidences of the growth of the place. Externally it had nothing to distinguish it from hundreds of houses to be found in our New England villages, other than that it had a little more than the usual amount of gingerbread work about it, and I should not have given it another thought had I not been told that the contractor styled himself "Architect and Builder." Having learned this much, it occurred to me that possibly I might pick up an idea or two from the "practical man" (as men of this class are called), and so I turned aside to inspect the building that was intended to be an ornament and a credit to the neighborhood.

I will say nothing of the dimensions of the scantling, as compared with the size of the house, but I could not but admire the skill displayed in putting in the trusses over the doors. A bit of 3″ x 4″ joist, with square ends, was tacked in between 3″ x 4″ door studs. This served as a header. Then two other pieces were set, the feet resting on the ends of the header, and the two, at an angle, were brought together under the girt, throwing the whole weight of the girt, should it settle, upon the nails that hold the header in place — an arrangement that any "practical man" should have known to be worse than useless; but to the owner it no doubt appeared to be an evidence of good and careful workmanship. This, however, was a small matter, compared with what I saw in the kitchen.

The chimney, built for a range, had a four-inch back, which touched the sill, and the trimmer was so placed as to preclude the possibility of having any hearth. If the range is not set with a false back of brick, then the back of the range will be but four inches from the wood-work; but allowing that a false back of but four inches is put in, making in all eight inches, then the front of the range must rest on the wooden floor and over the trimmer. When finished, a sheet of zinc will probably be nailed down in front of the range, to catch the coals that may fall from the grate, and then it will be thought that every precaution has been taken against fire. The owner will be perfectly satisfied with what he sees, and he will be elated to think that he has obtained all that he wanted without having to pay an architect for his services. Everything will go well for a time, but some day, after the range has been heated to an unusual degree, to do up a lot of baking as well as to cook for the family, some one will detect the odor of burnt wood. An unsuccessful attempt will be made to trace it out, and then it will be forgotten; nor will it be thought of again till midnight, when the inmates will have barely time to escape from the burning building. The fire, in the country, will have done its work so completely before help can arrive that there will be no way of telling how it originated, and the builder, who, to save a trifle and to avoid the necessity of turning an arch and putting in a hearth, prepared the way for it, will escape censure and a just reward for his crime. I use the word advisedly; to build in this way is a crime. How many of the houses that burn down every year were built in this manner no man can tell; but we know that in hundreds of instances where a fire has been detected in time to prevent its spreading, it has been traced to such — shall I call it stupidity or rascality?

A few years ago I was called upon to prepare plans and superintend the construction of a large brick building in a neighboring State; the lower floor to be used as stores and the upper floors for offices. Each office was to have a fireplace and grate. The plans were carefully drawn and every precaution was taken to have everything connected with the chimneys and fireplaces as perfect as possible. When the building was raised the contractor took upon himself to put the trimmer and headers close to the brickwork, making it impossible to put in any kind of a brick hearth. When his attention was called to it he promised to undo what had been done and to conform strictly to the plans. Between two visits of the architect the under floor was laid, close up to the chimneys, and the ceilings were lathed. When the builder was called up for this further breach of orders, he made some paltry excuse, and added, "I assure you, sir, it is all right and just as you wanted it." "Seeing is believing," was the reply, and when the laths were pulled off he had nothing further to say, for he had been convicted on the spot of both a cheat and a lie. If what had been done had been allowed to go unnoticed, that building would have been given to the flames a dozen years ago. The builder, who had the confidence of the owner, had quite a reputation as a workman and was extensively employed. How many fire traps of this kind he had previously set it would be difficult to conjecture. Frequently there have been fires in that town, many of them quite unaccountable. The builder himself suffered in this way, but he probably never traced the fire to its source, or supposed for a moment that it was the result of his own stupidity.

The insurance companies might correct this in a measure. Would not some such plan as this reach the case? If, for example, the insurance companies were to take risks at a lower rate on houses that had been frequently inspected by their own inspectors, while they were in the course of construction, and which, through such inspection, were known to be free from fire traps — would it not be to the interest of every man who intended to build honestly to have his house so inspected? It would certainly enhance the value of a house to have it stand A 1 on the books of an insurance board; and if the owner, knowing the advantages to be derived from such a standing, failed to avail himself of it when building, such neglect, if it did not awaken suspicion, would certainly put the insurance companies on their guard. Insurance companies employ inspectors to examine buildings that have been on fire — to shut the stable door after the horse has gone — but would it not pay them better to "take the ounce of preventive," to have their own building laws, and to see, through their own employees, that they were thoroughly carried out before taking a risk on the structure? The recklessness in building in this country is something alarming, and as long as there is so little discrimination between good and bad construction, we shall continue to have these fire traps put up everywhere. "It will do," or, "It is good enough" — that is the expression, time and again, and still the insurance companies continue to pay the piper.

CHAMPLIN.

NEWPORT, R. I.

MR. SEYMOUR HADEN'S EXHIBITION OF ETCHINGS.

A FEW words as to the nature of the very valuable and beautiful exhibition for which we are indebted to the liberality of Mr. Haden. To say all that might be said in regard to such a collection would occupy far more space than we could suitably bestow upon it: a few remarks upon its leading features must suffice. The etchings, which are the work of "old masters," afford illustrations of nearly every variety of style and feeling except that which is peculiar to modern work, and of which Mr. Haden's own etchings afford brilliant examples. We can travel from the precise, minute, and realistic work of Hollar to the opposite extreme of imaginative power and freedom of handling in some of the most powerful productions of Rembrandt. One of the first things that strike us, however, is not an etching, but an engraving by Beham (portrait of the Emperor Charles V.), placed among the etchings in a spirit of impartiality, as exhibiting a triumph of expression and execution with the burin, and representing what we may take as the finest type of work which this instrument can produce in the hands of an original artist. Mr. Haden regards this also, and with good reason, as an interesting illustration of the attempt to escape from the comparative hardness and stiffness of the continuous engraved line by breaking and interrupting the lines, in a manner scarcely noticeable without very close examination, but sufficing to give a considerable softness of effect, more approaching to that of etching. In curious contrast to this are hung two works by Abraham Bosse, in which the endeavor has been to impart to etching the look of engraving, by the careful and laborious use of parallel shading lines by which the compositions (representing the interiors of a studio and a printing-room) are almost entirely modelled: not probably with the actual intention of imitating engraving, but because the practical mind of the worthy Abraham Bosse valued neatness before anything else. Except as curiosities, these works are of little value. Some works by Both and Canaletto are of interest as showing these artists through a different medium from that by which they are generally known: Both's work with the needle is fine and sympathetic; that of Canaletto we can find little admiration for, it is niggled and mechanical, and wanting in tone. Several Claude etchings that are near these are beautiful in their combined freedom, finish, and aërial effect, and the comparison of this work with his paintings cannot but raise our ideas as to the genius of the artist and the extent of his capabilities. In regard to Claude we are considerably interested by the suggestion made by Mr. Haden about the *Liber Veritatis*, to the effect that these famous and over-praised drawings were really meant as "pictorial memoranda" of the pictures which the artist had painted and the persons for whom they were painted, in order to defeat the impostures of his contemporary imitators. Mr. Haden has the boldness to say that it is a mistake to suppose that they are very precious in an art point of view; and those who think most of Claude will be most likely to agree with him The soft landscape beauty of the Claude etchings, however, affords an almost tame enjoyment in comparison with that produced by the strong hand and over-mastering genius of Albert Dürer, in whose work we have the extraordinary combination of the most precise and hard finish with the wildest and most romantic feeling. It is unnecessary to say anything of these well-known works, except that some of the impressions here shown are peculiarly fine. Very interesting, also, it is to see some of the portrait etchings by Vandyke, in which the painter was to execute the head and other inferior artists to finish the work of adding background and accesso-

ries; it is needless to say that great value attaches to impressions taken before these additions were made, some of which are to be seen here.

Hollar is largely represented, and in despite of the absolutely prosaic turn of his art, interests one in the highest degree by his extraordinary and varied executive power and the thorough honesty of his art. His drawing of Antwerp Cathedral is a wonderful piece of solid and patiently accurate execution, yet remarkably deficient in regard to any feeling for the poetry of architecture. Yet when we turn from this to the little etching of "an English lady in a winter dress," the figure scarcely more than two inches high, and contemplate the minute delicacy of shading and modelling combined with really broad and forcible effect which this little work illustrates, we must form the very highest idea of Hollar's power of doing what he liked with his materials, and of being, when he chose, realistic without hardness. In his views of buildings the desire for rigid topographical accuracy appears to have stood in the way of artistic effect with him: this, of course, gives them a remarkable value as pictorial records; but the poetic element is at a minimum in his works, if it can be said to exist at all, and we certainly cannot, like Mr. Haden, see "everything" in Hollar, except in regard to mere technique. Nor can we share his enthusiasm about Karl du Jardin in the sense in which he expresses it; what strikes us, at all events, in the works exhibited here is not so much the tranquil or "tranquilizing" feeling of which Mr. Haden speaks, as the supremely able drawing in such a work as "The Two Horses;" the animal lying down and foreshortened is a masterpiece: even Paul Potter's "Chevaux de Charrue," of which there is an impression on the opposite wall, must yield to this.

Of the etchings of Ostade and those of Rembrandt which are exhibited, it is hardly possible to speak here, because one feels that one must say so much if one says anything. The Ostades are only seven in number, but they are examples of perfect balance in composition and manipulation which it would be difficult to match from any other hand. In mentioning them in the same sentence with Rembrandt, however, we by no means intend to imply any possibility of comparison between these works of consummate art, but restricted subject and feeling, and the great world of Rembrandt's art. Forty of the etchings of Rembrandt are placed here, and the contemplation of them fills one with a sort of wonder. There may be no single work with precisely the balance of style of Ostade, for the well-known "Burgomaster Six" is *over*-finished, and so unlike the usual aim of Rembrandt that Mr. Haden suggests that it was a special treatment adopted by the artist to please his friend the sitter. But if we look from one to another of the works in which Rembrandt was expressing that which was really and inherently characteristic of his genius, the expression employed above does not appear too large: his productions fill a whole world of feeling in themselves. Looking at the delicacy of such works as his little portrait of himself (the head only) with a fur cap, and the portrait of his mother before mentioned; then at the curiously chivalresque and cavalier style of the better-known half-length of himself, with cloak and feathered hat, in which he almost seems to have beaten Rubens on his own ground; then at the rich sensuous fulness and ripeness of execution and feeling in that portrait of his wife, Saskia, evidently executed in every sense *con amore;* and then pass to the tenderly pathetic sketch of "The dying Saskia;" and then come on a landscape ("The Three Trees") which even Turner has never surpassed,—and so on, through the list, we feel a sort of awe before the power and pathos of this marvellous self-educated genius, the culmination of whose power is fitly shown in that tremendous etching of "The Crucifixion,"—a thing which it is impossible to analyze, but which we feel is above all rules and criticisms of art, which Rembrandt only dared have done, and which no one after him could imitate with any chance of success.—*The Builder.*

THE SANITARY CONDITION OF TENEMENT HOUSES.

It is a very sweeping assertion to say, yet I do say without the least hesitation, and fully understanding all that it implies, that every tenement house in New York or elsewhere which was built so long as five years ago ought to have its whole drainage system entirely removed and replaced by the very best work of which the modern art of plumbing is capable, arranged according to the very best plan which modern sanitary knowledge can devise. I date back five years as a saving clause. It is possible, but it certainly is not probable, that a few of the more modern tenement houses may be properly drained. The objection will naturally be raised that to compel the owners of these houses to undertake such costly work would be a hardship, if not an actual invasion of their private rights. The objection is of no value. Capitalists of the class under consideration depend for their income upon the necessities of ignorant, heedless, and helpless people,—of men, women, and children who hold their lives daily subject to the most imminent danger.

A great outcry is raised against the bad sewers of the older parts of all our cities, and they are bad enough to justify the outcry. At the same time, the houses connected with them get their bad effect only at arm's length, and they need not get it at all. As at present arranged, there is no doubt that they do receive an injurious amount of sewer gas from them. At the same time, there is just as little doubt that their own private drains, soil-pipes, and waste-pipes are active and constant producers of equally deleterious gases, sufficient to account for the unhealthy condition which is so often ascribed exclusively to the sewer in the street.

It would be a comparatively small matter so to disconnect every house from the sewer that it need be in no danger of an invasion of its gases. If only this were needed to remove the drain diseases which we know to be so rife, our problem would be a very simple one. Unfortunately what is needed is very much more serious than this, and must be very much more costly.

The health officers of every city know, or it is their duty to learn, and they may learn very easily, the relations existing between defective drains and waste-pipes and the ill-health of those who live in houses containing them. This knowledge must qualify them to pass a decree of absolute condemnation against every one of these wrongly arranged and badly constructed appliances. Trashy soil-pipes, imperfectly jointed, unventilated, unflushed, and inadequately supported, as they exist in so many of our tenement houses; corroded waste-pipes, half choked with foul accumulations and sagging in their course; traps so shallow, so badly placed, and so badly arranged that they are traps only to catch those who trust them; and open-mouthed sink-wastes, pouring their mephitic exhalations into the interior of close and closely-packed houses,—to say nothing of the worst possible water-closets in the worst possible condition,—these are the rule, not the exception, in nearly all our tenement houses. Even where inspection is rigid, and it is probably nowhere more so than in New York city, the standard by which plumbing is measured is by no means that of the best modern work; it is not even that of the "first-class" houses up-town. It should be, and if tenement houses are to be made fit residences for the poor, the overworked, and the careless, it *must* be something very much higher and better. — *Colonel Waring, in The Plumber.*

CORRESPONDENCE.

Cincinnati.

The periodical fever about the erection of a new Merchants' Exchange is fully on again, and it seems to have broken out with greater fury than ever before. A committee from the Exchange have been in search of a site for some time past, and within a week this committee reported unanimously in favor of the southeast corner of Fourth and Elm streets, extending down Elm Street to McFarland Street, which is one hundred and fifty feet, the lot being one hundred feet on Fourth Street. This is certainly a fine corner, but there is a very strong feeling among the merchants at large that the site is too far west, and there seems no doubt that a site further east will be ultimately agreed upon.

And now is exhibited the usual rush and greed of the profession when there is any game in the field. Invited or uninvited, the architects are submitting plans and elevations and suggestions of every tongue and creed, even before a site has been selected whereon to erect their imaginary chambers of commerce. Descriptions of these structures (that are to be) are appearing in the daily press just as if plans had been adopted and the work commenced. This undue haste on the part of the architects looks as if each one expected to forestall the market, to the exclusion of all others, by having his particular plan appear in the daily newspaper. We are of the opinion that this action on the part of architects does not tend to build up in the public mind that esteem and respect the profession so earnestly desires and which is accorded to other professions.

THE ELECTRIC LIGHT.

The *Clereland Leader* says that Mr. Brush, of that city, has recently made improvements in electric lighting which surpass all other inventions in brilliancy of illumination and in economy. He has lately made a machine for one of the largest cotton mills in New England. It is a machine which absorbs about fourteen horse-power, and produces in a single circuit eighteen powerful steady lights of two thousand candle-power each. At the time of the reporter's call, the machine was undergoing its final test. The eighteen lamps in the row upon the fourth story were all burning in varnished glass boxes, so that their operation could be closely studied without injury to the eye, while the machine was being propelled on the ground floor. These eighteen lamps will be in eighteen different rooms of the great factory, and will furnish light equal to the midday in brilliancy. When the lighting is desired, it is not necessary to give any attention to the various lights, but simply to turn the band upon the shaft and start the machine in motion, when instantly all the lights in the circuit burst forth into brilliancy. A very ingenious device in the lamps prevents any particular one from getting more than its share of the voltaic arc, and another device allows any lamp to be temporarily cut out of the circuit without disturbing the rest in the least. In case an accident should happen to any lamp which prevents it from burning, it is instantly cut out of the circuit and remains out, allowing all the rest to burn until the lamp is in its normal condition, when it relights itself. In the eighteen Brush lamps the total cost of the carbon consumed in all the lamps is seventy-two cents per hour, each light being equal to two thousand candles, and lasting eight hours without attention. The difference over the French system is about six to one in favor of that of Brush, says the *Leader.*

The Van der Weyde electric light was employed lately to illuminate Regent Street. The test it underwent was more than usually severe, for at the West End house after house had gas jets in celebration of the Prince of Wales's birthday, and many had huge flambeaux of gas. But the electric light at No. 182 overpowered all, and served to show the incomparable superiority of electricity to gas as a means of illumination. The new light was everything, while gas-light was as nothing. The people stood gazing at the illuminator until obliged to move on by the pressure of the crowd, a proof that there are no ill effects upon the eyes. The exhibit was not in a lamp form, as at the Gaiety Theatre; but the light streamed from a large concave cover, placed at an angle of about forty-five degrees, in the second floor. There was a disc of porcelain between the carbon point and the space illuminated by the light, so that only reflected rays were seen. The motive power is given by an eight-horse-power gas-engine working in the basement of the house, and this requires no attention. The carbon point, when the lighting commenced, was a foot in length, and after four hours' burning only six inches had been consumed, so that one point may be fairly estimated to burn at least six hours; placing a new point in will occupy only a few seconds. — *London Times*

FACTORY CHIMNEY SHAFTS.

In a recent paper read by Mr. R. M. Bancroft before the Civil and Mechanical Engineers' Society, some practical details on chimney construction are given. Referring to foundations, great care is necessary to insure an equally resisting bed upon which to build, and the author wisely suggests the importance of boring so as to insure this condition. Concrete may considerably aid in spreading the pressure of a lofty shaft over a large area, but the pressure of wind exercising a considerable leverage has caused many chimneys to lean or topple over. A gale often strikes a shaft, causing one part of the foundation, the leeward side, to sustain a pressure considerably greater than the normal and vertical weight of the shaft, and numerous instances are on record where stacks from this cause have become considerably deflected from the perpendicular. There is greater risk from a gale of wind when the mortar is not solidified. An instance of the effect of a gale on a lofty chimney is given by Mr. Bancroft in the Townsend Chimney, Port Dundas, the height of which is 468 feet to top of coping. It was designed by Mr. Robert Corbett, of Glasgow, for Mr. Joseph Townsend's Chemical Works. No piles were used in the foundation, which is built on "blue till" or clay of rock-like compactness. The footings consist of 30 courses, brick on edge, the lowest being 50 feet, and the topmost course 32 feet diameter, and the erection of the shaft was carried on from July, 1857, until October, in 1859, in three seasons. The inside lining is of 9-inch fire-brick, and 60 feet in height, built distinct from the chimney, with an air space between, covered on top to prevent dust from falling in, but built with open work in the upper four courses to allow air to pass into the chimney. The shaft is coped with vitrified "till," flanged over wall of chimney, and jointed in Portland cement. Iron hoops are built in at intervals of 25 feet in height, and the thickness of the chimney wall varies from 5 feet 2 inches for the first 60 feet of height, to 1 foot 2 inches for the last 20 feet, and the sections are in 30, 40, and 52 feet heights. In September, 1859, the chimney was struck by a gale, which caused it to sway, also the scaffolding on one side to give a little, and had not the process of sawing been promptly commenced it is thought that the chimney would have fallen. By this process the shaft was restored. The shaft is protected from lightning by two copper-wire conductors, one half inch thick, placed on opposite sides, joined to one pike, fixed over the top; which, however, have not prevented damage to the shaft by the electric discharge on several occasions. The ordinary pressure of chimney shafts on the foundations may be taken to be from 5 to 10 tons per square foot. Various chimney shafts are mentioned in which a deflection has taken place, the ordinary means of restoration to the vertical being by making saw cuts on the side of shaft opposite to the inclination. Another and often more practicable plan in thick shafts is to remove a layer of bricks on the required side, replacing it by a thinner layer at different intervals in the height of shaft. Care should be taken, however, not to make the slits too wide, or an inclination is produced in an opposite direction to that intended to be rectified. Another plan has been to weight the foundation on the side opposite to the deflection, and one successful case is mentioned. Messrs. Edward Brooks & Sons' chimney, of the Fire Clay Works, Huddersfield, is of fire-clay, 330 feet high, the shaft being 21 feet diameter at ground, and 12 feet at top, outside. The proprietors recommend one regular batter from bottom to top, that no stones should be used at the top of chimneys where acids are emitted, and that any overlapping should be formed by hard-burnt radiated fire-brick, 14 inches by 5 inches by 3 inches. In the north of England, cavity chimneys are often built, in which the inner ring is carried up vertically of 4½-inch fire-brick for 20 or 30 feet, the main outer shaft closing with it as it diminishes or batters to the top. The outer shaft is often 14 inches thick at the base. We cannot here detail the many other useful particulars furnished by Mr Bancroft in his instructive paper, in which he classifies about forty chimneys, giving the height, diameter, diminution of shaft, weight in tons, number of bricks used, cost of erection and scaffolding, the architect or engineer's name, and the time occupied in building. Many of these particulars are incomplete, but the data given will be found useful by all builders of this class of erection. — *Building News.*

STEAM HEATING; THE HOLLY SYSTEM.

The citizens of Utica are moving in the matter of forming a company to introduce the Holly system of steam heating in that place. They recently sent a committee to Lockport to examine the system, and Mr. Edward Martin, a mechanic, made the following verbal report of what he saw: —

The system was first experimented upon in that city last winter, and now the majority of the people of Lockport are deeply interested in the enterprise. Two boilers are used at the headquarters, of from 60 to 80 horse-power. They consume about three tons of coal per day, and at present about 150 buildings, including churches, schools, dwellings, and stores, are heated through one mile and one third of pipes. But two attendants are required at the boilers, — one day fireman, who receives $1 per day, and the night fireman, to whom $1.25 is paid. Four inch mains are used. They are covered with asbestos, and laid not over three feet underground, within pump logs (to prevent condensation), which are laid in U-shaped drain-tile to keep the moisture away. "Junction boxes" are placed in the mains, at the distance of every 100 feet. These are intended to collect the water that is condensed from the steam, and this is the patent which the Holly company controls. The attachments for all buildings are made at these boxes, as the mains are not tapped in other places. The simple mechanism of the junction boxes causes the water condensed from the steam to be forced into the house pipes, and thus the mains are kept clear for the free passage of steam. The supply pipes only range in size from one half to one and one half inches, and attached to them are regulators which govern the amount of steam used. The water from the mains, being forced into the small supply pipes with the steam, becomes vaporized or converted into steam main, but is again condensed, and may be drawn off within the house. Where there are no customers within 100 feet distance on the main, the water is trapped off into the sewers. The steam is led into the common form of radiators now used, or, simpler still, into one formed of two-inch tin pipes, which heat very quickly and give out a pleasant heat. On the day of the committee's visit there was 30 pounds pressure in the boilers at headquarters. The pressure in the houses was much smaller, and by the diminution of the pipes can be reduced as low as desirable. With the tin radiators which are in general use at Lockport there is little or no pressure, the steam being admitted through a small aperture in the top. Water was boiled in three minutes by the use of the live steam in the radiators in a private house. The steam is to be measured by a meter something like that u ed for gas and water. The expense of newly fitting houses, stores, and churches ready for using steam ranges is from $125 to $400, governed entirely by the number and style of the radiators. All styles of pipes and radiators for steam heating now in use can be utilized for the new system, and the boilers and furnaces can be taken out.

The schedule of rates for heating was not obtained, as the meter form of measurement is new, and the prices are not fixed. The company now agrees to heat buildings for the amount now paid by the occupants for their coal for heating purposes. The economy of the system is this: It saves the cost of the stoves, furnaces, and boilers now employed in each building, store, and office or apartment, and the amount paid out for the wear and tear of the same; it saves the expense and annoyance of caring for the heating apparatus in each building, the handling of coal, ashes, cinders, etc., and above all does away with all risks from fires, carelessness, etc. Like water and gas, the steam is at the command of the consumer at all times by simply turning a valve. Steam stoves for cooking and washing have been invented, and an attachment can be made in every room which will fill it with steam and extinguish fires immediately. Direct or indirect radiation, or both, can be used. The mains can be laid under the roadways or sidewalks, or passed through the cellars of entire blocks. The loss of pressure at the end of a mile main is not over five per cent. — *Troy Times.*

THE REGINA MONUMENT.

We have already noticed the discovery of the sepulchral monument exhumed at South Shields at the close of last month. Mr. W. de G. Birch of the British Museum, who exhibited a paper cast of the inscriptions to the British Archæological Association on the 20th of November, contributes a paper upon the monument to the forthcoming "Transactions" of that body. Professor Wright, of Cambridge, will give a paper upon the inscriptions in a future number of the "Transactions" of the Society of Biblical Archæology; and Mr. Llewellynn Jewett, F. S. A., will have a representation of the sculpture in the *Reliquary*. Thus in a short time the public will be supplied with all the information that can be given about this acquisition.

The monument was found by some workmen who were excavating at a considerable depth at the back of Bath Street, South Shields, the site of a Roman cemetery, believed by Dr. Hooppell to be the ancient *Tunnocelum*. The material is a close, warm-tinted sandstone. The height to the top of the arch is four feet six inches, to the top of the sides three feet seven inches. The breadth is two feet three inches and a half. The design is as follows: Upon a broad

plinth, the face of which is about twenty-eight inches by eight, two Corinthian columns, with ornamental double capitals, support a hollow pediment. Within the niche thus formed is seated a female figure, upon a chair of basket-work; her face has been destroyed, but the drapery is neatly disposed, and there are some indications of jewelry or ornaments round the neck and at the wrists. The head is adorned with a broad circular ornament, which may be intended for a nimbus, a *meniskos*, or a turban, for the mutilation of this part of the figure prevents the identification of this object. The left hand of the figure reclines upon her knee; in it she holds what may be a pomegranate, an ear of maize, or an artichoke. In a cylindrical basket on this side of the figure are other offerings of the same kind. The right hand is placed upon an altar with a square base, which has in front, clearly marked, a well-defined crescent moon. This crescent probably is the emblem of that deity to whom the deceased woman is making an offering. The face of the plinth has three lines of Latin: —

DM · REGINA · LIBERTA · ET · CONIVGE ·
BARATES · PALMYRENVS · NATIONE ·
CATVALLAVNA · AN · XXX.

According to the usual formulæ of Roman sepulchral epigraphy, the dative rather than the ablative case should have been found in the first line. There is, too, a difficulty with the third line, the first word of which may be an adjective referring to *natione*, and setting forth the status of the woman who was at first the *slave*, then the *liberta*, and finally the *wife* of her former *master;* or it may be the name of the town to which she belonged. In this latter case *natione* must be taken with the word which precedes it, and so refer to the man Barates. *Regina* has been by some thought to be an Oriental appellation, but the "Altdeutsches Namenbuch" of Dr. Ernst Förstemann shows that the root *Ragan* (Consilium) enters largely into Western European names; *Regina*, itself a derivative, occurring in several passages quoted by this author. *Catuallauna* recalls the northern tribe, whose name is yet current among us in the familiar Welsh form of Cadwallader. Below the Latin is a single line of Palmyrene, thus deciphered: "Regina Bath-Hêrê, Bar'atê, habal," the Latin equivalent of which is "Regina liberta Baratis, eheu!" The name of Barates may possibly give us the clue to the deity whose emblem is shown upon the altar above, for Ate is a well-known member of ancient Semitic mythologies, and Barates would, with his wife and household, naturally pay his devotions to the god of whom he himself was styled the son, that is, the worshipper or follower. — *The Athenæum.*

NOTES AND CLIPPINGS.

A subscriber writes to ask us what is the condition of the building trades in St. Paul, Minnesota, and what are the wages of plasterers there. Can any of our readers inform us?

High Building in New York. — There is a marked development, of late, of lofty buildings in the business part of the city. Some years ago, when the Tribune building was in course of erection, that paper predicted that the style of business building, of which that structure was about the only example, would become general in this city, where the narrowness of Manhattan Island crowds the commerce of a continent into about a tenacre lot; that with the universal use of elevators people would be just as willing to have offices in the seventh or eighth story as in the first. The prediction seemed a long way from fulfilment then, but now it may almost be said to be verified. Just one door below the Tribune, on the corner of Nassau and Beekman streets, where the old Park Hotel has stood for a number of years, a massive brick building for offices has already reached its seventh story, and is going higher. It looms up already above all the surrounding buildings but the Tribune, and seems almost like its rival, being built in a style imitating that of the Tribune somewhat. Down near Trinity Church, on Broadway, the new Boreel building is in process of construction; it is owned by Mrs. Boreel, who hails from the Astors. This has a high basement, high enough for handsome offices, a lofty first story suitable for a bank or insurance company, and five stories above that It is a large building, and will use four elevators. There are others like these now building. Indeed, the stranger who approaches New York by the harbor sees now an imposing array of lofty buildings where there used to be very few. The Tribune towers above them all, but there are, besides the new buildings on Nassau street, the Evening Post and Western Union Telegraph buildings on Broadway; the Mutual and Equitable insurance buildings; the Coal and Iron Exchange; the Boreel building, and half a dozen others, which give to a bird's eye view of the city a look of real grandeur. What with the elevated roads and the nine-story buildings, New York will soon assume the appearance of a city built in several stories, and only needing a mansard roof. — *Cincinnati Gazette.*

The New York Water Front. — The improvement of the water front has gone steadily forward; new piers have been built and old ones repaired; the bulkhead wall has made progress; the section between Canal and West Eleventh streets, intended for the accommodation of foreign steamers, and the territory leased to the Erie Road above Warren Street, are being rapidly improved; and the revenues of the Department have exceeded the entire expenditures by $223,745. Instead, therefore, of an increase of the city debt by the work on the water front, there is an actual reduction. The Commissioners estimate that the revenues of the Department will in a comparatively short time reach the sum of $1,000,000 annually. It is intimated that the demand for cheaper wharf-rents is about to be met by the construction of up-town piers at points where local business does not create the lively competition which puts up prices.

A New Method of planting Telegraph Poles. — A new method of planting telegraph poles has been introduced in Pennsylvania. The ground is staked off at distances of 200 feet apart; a man starts off with cartridges of "electric powder," and with a crow-bar in his hand. The bar is driven four or five feet into the ground, a cartridge with a lighted fuse is dropped into the hole, and the man proceeds to the next stake, but before he reaches it the cartridge has exploded, making a cavity as big as a flour barrel in the ground, and a gang of men who follow plant a telegraph pole in the spot. In this way four men will set up 100 to 150 poles per day, and at a cost two thirds less than by the old way.

Robert Wallis. — Robert Wallis, a distinguished landscape engraver, died in London on the 23d ultimo, at the age of 84. He engraved many of Turner's pictures.

The Proposed North River Tunnel. — Mr. Trenor W. Park, the New England Railroad operator, and Tom Scott, of Pennsylvania, have been in New York to make arrangements for pushing the work of tunnelling under the Hudson River between New York and Jersey City. A number of Chicago men are taking hold of the enterprise. About $10,000,000 will be required to do the work. The route has been surveyed and requires the tunnel to be three miles long. The inclination will be very slight, and the work when once completed will cost nothing for repairs. The tunnel proprietors will be identical with the Steam Railroad Company, running the entire length.

Workshops at the University of Cambridge, England. — At the University of Cambridge, England, it is said, mechanical workshops have been fitted up with machinery for the construction of instruments and apparatus to be employed in philosophical research. Good workmen have been employed as teachers. Several University men, who intend becoming engineers, have become members of the classes now formed for regular instruction in the use of tools and machine construction.

An Historic Building Burned. — On Christmas day a fire was discovered in the dwelling house known as the old Dongan mansion, on Richmond terrace, West New Brighton, Staten Island. The building was entirely consumed, but the furniture was all removed with very slight damage. This was one of the noted dwellings of historic interest, having been built in the year 1668 by the Colonial Governor, Colonel Thomas Dongan, who was afterwards known as the Earl of Limerick. The house had been externally modernized in some degree, but the oak frame hewn out of the adjacent forest is the identical one erected by the Governor, the date of the building having been marked upon one of the timbers with white paint.

Statues for the Hartford Capitol. — Of the twelve marble figures intended to adorn the base of the dome proper of the new Capitol — a position on the dome tower, elevated seventy-five feet above the roof — five or six are already nearly finished, under the chisels of the sculptors at Batterson's. These statues are various symbolical figures, eight feet high, and when placed in position will add much to the effect of the dome. They are cut out of blocks of imported marble that weigh about eight tons apiece. Next spring the work of elevating the statues to their position will begin.

The French Exhibition. — It is thought that a large part of the present Paris Exhibition will be transferred to Sydenham Palace, in London, for a permanent museum of art and industry, as also a bazar where sales of the articles from Paris can be effected from samples. This is in large measure the controlling idea of the Permanent Exhibition at Philadelphia.

A Porcelain Factory. — An effort is to be made to restore to Philadelphia the industry of porcelain making, which flourished there from 1816 to 1837. The pottery ware manufactured by William Ellis Tucker and his successors during that period was the best in America, but, the business dying out, the manufacture was discontinued. Now that ceramic goods and bric a-brac are the rage, a factory is to be established in this city to supply the demand and secure the trade which now goes to England and the Continent.

In connection with this there will be a school, where the art of modelling, designing, and decorating may be acquired. One impediment is the high price of ground in a suitable location, and a spot has been selected south of Girard Avenue, and cut off from the Zoölogical Garden by the embankments of the Pennsylvania and Junction railroads. The Park Commissioners, however, have no power to lease or sell Park property, and an act of the Legislature will be necessary to overcome the difficulty.

A Curious Stone. — A remarkably curious stone has lately been discovered in the Eternal City, on which is engraved an inscription of the time of Adrian. It concerns a circus driver of the name of Crescens, who, in less than two years, realized a considerable fortune by the victories he obtained in the public games. Crescens was of Moorish origin, and was twenty-two years old when he contested for the first time at the fêtes given on the birthday of Nerva. On that occasion he was the twenty fourth to start, a circumstance which seems to indicate that a system even then existed somewhat analogous to what we call handicapping, as the car driver or the animals he drove had probably previously gained some victories, or were considered as too powerful for the rest of the competitors. Crescens has bequeathed to posterity the names of the horses which contributed to his victories. They were Circius, Acceptor, Delicatus, and Colonus, appellations which refer to the qualities or exploits of the animals. As we have mentioned above, Crescens was only twenty-two when he commenced his career, which terminated two years later. He took part in 686 contests; he gained 47 first prizes, 130 second, and 111 third. Only on one occasion was he placed in advance of his rivals, and thirty times, when he was put in the last rank, he regained the advantage his competitors had received. He won in money 1,553,346 sesterces, about 312,000 francs, estimating the sesterce at twenty centimes. — *Troy Times.*